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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : D06F 39/02	A1	(11) International Publication Number: WO 96/26312
		(43) International Publication Date: 29 August 1996 (29.08.96)

(21) International Application Number: PCT/EP96/00678

(22) International Filing Date: 14 February 1996 (14.02.96)

(30) Priority Data:

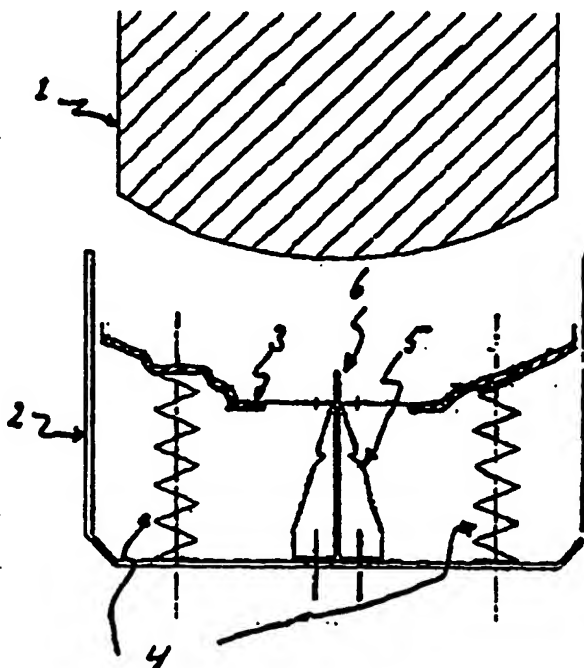
95200395.2 20 February 1995 (20.02.95) EP

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international application was filed: NL et al.(71) Applicant (for all designated States except AU BB CA GB IE  
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pweg 17, NL-3981 EX Bunnik (NL).(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY,  
CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS,  
JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD,  
MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD,  
SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO  
patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AZ,  
BY, KG, KZ, RU, TJ, TM), European patent (AT, BE, CH,  
DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE),  
OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR,  
NE, SN, TD, TG).**Published***With international search report.**Before the expiration of the time limit for amending the  
claims and to be republished in the event of the receipt of  
amendments.*

(54) Title: LIQUID DISPENSING SYSTEM

## (57) Abstract

A system is provided for dispensing fluids comprising a housing and a flexible refill pouch (1), whereby the housing comprises a reservoir (2) into which the pouch can be positioned, and which contains a piercing member (5) tightly connected to the bottom part thereof and projecting therefrom outwardly into said reservoir, and further a platform (3) for positioning the pouch which platform is movably attached around the piercing member to the bottom part of the reservoir such that it will move down into the direction of said bottom part when a full pouch is placed onto it and will return to its original position when the pouch becomes empty. This system can be effectively operated with a blunt piercing member (6).



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## LIQUID DISPENSING SYSTEM

### TECHNICAL FIELD OF THE INVENTION

The present invention is concerned with a system for  
5 dispensing liquid product, in particular liquid detergent  
product, from a refill pack. The dispensing system of the  
invention is particularly suitable for use in combination  
with a dosing pump for dosing said liquid detergent product  
into a washing machine.

10

### BACKGROUND OF THE INVENTION

Dispensing systems of the above-indicated kind have been  
described in the art.

For example, EP-A-014,805 discloses a system for dispensing  
15 a liquid product comprising a flexible refill pouch con-  
taining said liquid and a refill reservoir for positioning  
said pouch. Furthermore, said reservoir comprises a pier-  
cing member which is suitable for penetrating the pouch  
when it is positioned in the refill reservoir.

20 It was found that the piercing member needs to contain a  
sharp knife for easy operation of such a dispensing system.  
As a consequence, this type of dispensing systems is poten-  
tially hazardous in that there is a significant risk of  
operating people injuring themselves.

25

We have now surprisingly found a new type of liquid dispen-  
sing system which can be effectively operated with a blunt  
piercing member, thus considerably reducing the above-in-  
dicated risk.

30

### DEFINITION OF THE INVENTION

Accordingly, the present invention provides a system for  
dispensing fluid, comprising a housing and a flexible  
refill pouch, whereby the housing comprises a reservoir  
35 into which the pouch can be positioned, and which contains  
a piercing member tightly connected to the bottom part

thereof and projecting therefrom outwardly into said reservoir, characterised in that said reservoir further contains a platform for positioning the pouch which platform is movably attached around the piercing member to the bottom part of the reservoir such that it will move into the direction of said bottom part when a full pouch is placed onto it and will return to its original position when the pouch becomes empty.

#### 10 DETAILED DESCRIPTION OF THE INVENTION

The movable platform is generally a plate having an opening of sufficient size for achieving its movability around the piercing member. The effect of the movable platform present in the system of the invention is that it will move downward under the weight of a fresh completely filled refill pouch when said pouch is placed onto it. It was found that, as a result of this downward movement, the pouch will be easily penetrated by the piercing member, more easily than when the movable platform were not present in the system of the invention.

Without wishing to be bound by theory, it is believed that said phenomenon of easy penetration is caused by increased tension build-up in the flexible film material of which the pouch is made, resulting from the movement of the platform. In other words, it appears that the film material of the fresh pouch cannot fowl itself around the piercing member - or indeed only to a minor extent - when the pouch is positioned on to the platform, whereas said fowling behaviour of the pouch is present to a much larger extent when the platform is absent.

Because of this phenomenon of easy penetration, piercing members with both sharp and blunt knives can be effectively used. In view of the above mentioned reduced risk of injury, piercing members with blunt knives are preferred.

For easy operation of the movable platform, knife-shaped piercing members are desirably applied. Piercing members having widely varying shapes and configurations, such as those having a triangle shape or containing a curved blade, 5 may be effectively used, provided that these members have an oblong pyramid-type shape so as to enable the platform to move downward around them thereby creating a sufficiently large hole in the pouch for the liquid to smoothly flow out. Preferably, the piercing member is positioned 10 at the central axis of the reservoir such that its own longitudinal axis coincides with this central axis.

The reservoir containing the movable platform may have a rectangular or a circular cross-section. For practice 15 reasons, the movable platform present therein is preferably a plate of which the outer shape corresponds with the internal cross-section of the reservoir. The opening in the platform has preferably a round shape.

20 Preferably, the pouch is not only flexible but also disposable. Flexible films made of one single layer as well as multilayer films can be suitably used as pouch material. Examples of such suitable materials are polypropylene and polyethylene.

25 A movable platform having suitable movability can be obtained by the application of both springs and an hydraulic system. For economic reasons, a spring-loaded platform which is connected to the bottom of the reservoir by way of 30 springs, is preferred.

It is desirable that during operation of the dispensing system of the invention the pouch is completely emptied and that no residue is left behind therein. 35 In order to achieve this, the piercing member is preferably provided with one or more retaining hooks. These hooks keep

the film of the pouch in a fixed position around the penetration hole while the movable platform is gradually moving upward by decompression of the springs when liquid is flowing out of the pouch, thus creating a funnel around the penetration hole and allowing all the liquid to flow out of the pouch. For facilitating the formation of this funnel, the platform is preferably funnel-shaped.

The system of the invention is particularly suitable for use in combination with a dosing pump for dosing the liquid poured out of the pouch into the reservoir. When said liquid is a liquid detergent product, the dosing pump may be effectively used for dosing said liquid into a washing machine.

15

The invention is further illustrated by Figures 1-3 which show schematic cross-sectional views of the dispensing system of the invention at consecutive stages when operating the system.

20 Referring more in detail to the drawings, in Figure 1 (1) indicates a flexible pouch filled with liquid. Also a reservoir (2) is shown, containing a spring-loaded platform (3) attached to the bottom of the reservoir by springs (4) and movable in the vertical direction around a piercing member (5) having a blunt knife (6) on its upper side. Figure (1) depicts the first step when operating the system, i.e. the step in which the pouch is put into the reservoir (2) and just before it is positioned onto the platform (3).

30

Figure 2 shows the second step, wherein the platform has moved down under the weight of the pouch (1) and the blunt knife (6) has penetrated the film material of the pouch, thus creating a hole through which the liquid can move out of the pouch into the reservoir.

Finally, Figure 3 shows the situation in which at least part of the liquid in the pouch has flown out causing the pouch to loose weight and the platform to move upward by the action of the springs. It can be seen that retaining hooks (7) keep the film of the pouch surrounding the penetration hole fixed in the lowest position thus creating a funnel centered around this hole and allowing all the liquid to flow out of the pouch.

10 It is emphasized that the system shown in the Figures illustrates a only preferred embodiment of the invention and that various constructional alternatives will be immediately evident to the man skilled in the art, without departing from the scope of the present invention as

15 described in the claims.

## CLAIMS

1. System for dispensing fluid, comprising a housing and a flexible refill pouch (1), whereby the housing comprises a  
5 reservoir (2) into which the pouch can be positioned, and which contains a piercing member (5) tightly connected to the bottom part thereof and projecting therefrom outwardly into said reservoir,  
characterised in that said reservoir (2) further contains a  
10 platform (3) for positioning the pouch which platform is movably attached around the piercing member to the bottom part of the reservoir such that it will move into the direction of said bottom part when a full pouch is placed onto it and will return to its original position when the  
15 pouch becomes empty.
2. System according to claim 1, wherein the piercing member contains a blunt knife (6).
- 20 3. System according to claim 1 or 2, wherein the platform is spring-loaded.
4. System according to any of claims 1-3, wherein the piercing member is provided with one or more retaining  
25 hooks (7).
5. System according to any of claims 1-4, wherein the reservoir is connected to a pump for dosing the liquid poured into said reservoir from out of a refill pouch.  
30
6. System according to claim 5, wherein the liquid is detergent liquid and the pump is suitable for dosing this liquid into a washing machine.



Figure 1 1/2

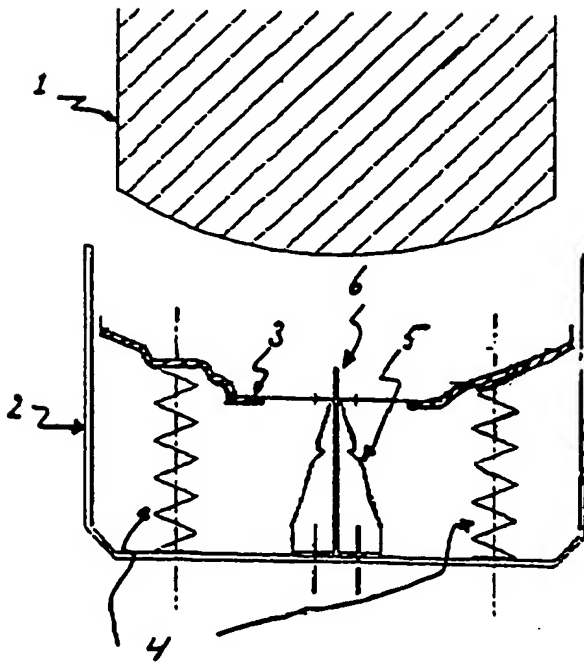


Figure 2

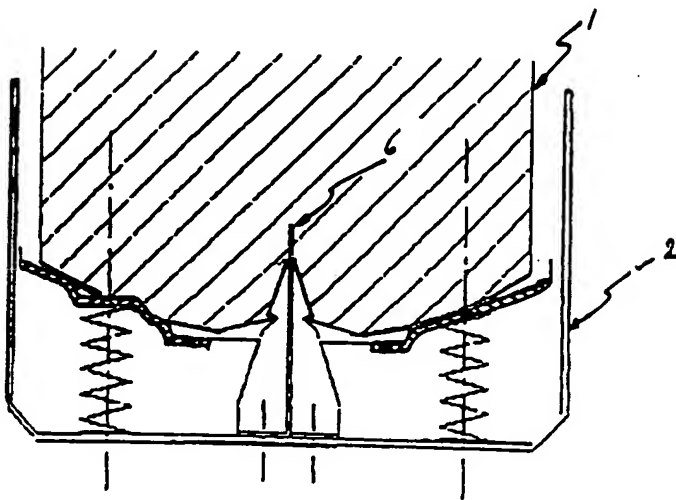
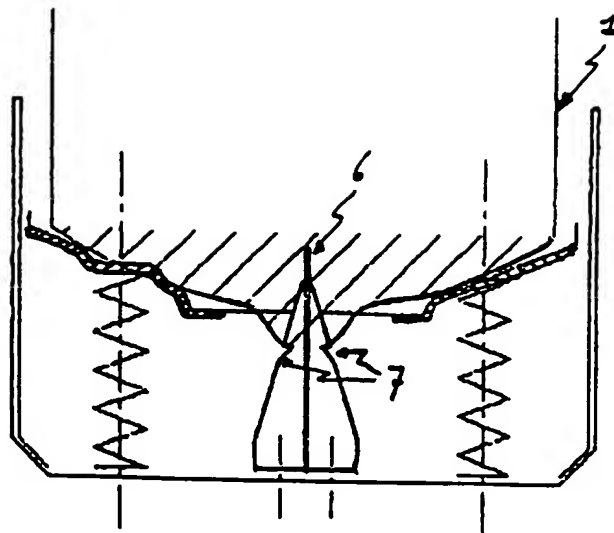


Figure 3



# INTERNATIONAL SEARCH REPORT

Inter: nal Application No

PCT/EP 96/00678

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 D06F39/02

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 D06F A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE,A,32 16 151 (VEB WASCHGERÄTEWERK SCHWARZENBERG) 30 December 1982 see claims; figure 1 ---	1,5,6
A	FR,A,1 492 562 (CONSTRUCTA-WERKE GMBH) 4 December 1967 see the whole document ---	1,2,5,6
A	DE,A,28 04 810 (H. SCHROTT) 9 August 1979 see claims; figures ---	1,2,5,6
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Date of the actual completion of the international search

5 June 1996

Date of mailing of the international search report

21. 06. 96

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 96/00678

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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